

ABSTRACT

A multi-layer substrate comprising: a plurality of metal layers, on each of which a predetermined printed-circuit pattern is formed; and at least one insulating layer formed between the metal layers, wherein the plurality of metal layers includes: at least two high-
5 frequency signal layers for transmitting a high-frequency signal. At least one ground layer provides a ground for the other metal layers, and wherein at least one via hole is formed through the multi-layer substrate to connect the high-frequency signal layers to each other. An impedance-matching hole passes through the ground layer so as to provide a path through which the via hole passes, and wherein a distance between the via hole and the
10 ground layer is adapted for adjustment by the impedance-matching hole to adjust capacitance, so that a quasi waveguide is formed and impedances in part of the hole are matched when a high-frequency signal is transmitted through the hole. Ground pads which are electrically connected to the ground layer and signal pads which are connected to the hole to help the adjustment of capacitance and increase matched bandwidth.

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